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Knowledge, attitudes and practices of voluntary HIV counselling and testing among rural migrants in central China: a cross-sectional study

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Objective: To document knowledge, attitudes and practices of voluntary HIV counselling and testing (VCT) among rural migrants in central China. **Methods:** A cross-sectional study with face-to-face anonymous questionnaire interviews was conducted using a structured questionnaire. **Results:** Among 1280 participants, 87.9% reported having had sexual intercourse during their lifetime, with 69% of singles reporting having had sexual intercourse and 49.1% having had sex in the past month. Only 21% always used condoms, 84.4% knew HIV infection was diagnosed through blood testing, 56.6% had heard of VCT, but only 3.8% perceived their own risk for HIV infection. Only 43 (2.3%) had ever been tested for HIV, and none had ever been tested at a VCT site. About two-thirds (64.5%) would be willing to use VCT services upon awareness of HIV risk. A logistic regression model showed that females, those having little knowledge of HIV/AIDS, those unwilling to work with HIV-infected individuals, never having been tested for HIV and having low awareness regarding HIV risk were less willing to use VCT. **Conclusions:** The results of this study indicated that much greater efforts are needed to improve HIV/AIDS and VCT knowledge, to promote safer sex and to improve VCT acceptance among rural migrants in central China, particularly those engaging in risky behaviours.

Introduction

The Chinese Ministry of Health (MOH) estimated that at the end of 2009, about 740 000 people were living with HIV (PLWH) in China.[1] However, a substantial proportion of them actually do not know their HIV status. Given that knowing one's HIV status is the first step to accessing care and preventing further infection,[2] the large number of HIV-infected individuals who do not know their status underscores the need for increasing acceptance and utilization of HIV testing services in China.

Voluntary counselling and testing (VCT) has been demonstrated to be one of the most effective strategies in identifying HIV-infected individuals.[3–5] It may also serve as an important entry point for HIV-infected individuals to get access to further HIV-related care and treatment. During the past 5 years, China has established 4293 VCT clinics all over the country,[6] where free and professional HIV counselling and testing are available. This provides a unique opportunity for risk-taking persons to receive HIV counselling and testing services.

During the past three decades, >100 million rural residents in China have gone to other rural but mostly urban areas for economical reasons. Most of them were young and sexually active,[7,8] and some were engaging in high-risk behaviours.[9–11] They have been described as the 'tipping point' for the HIV/AIDS epidemic in China.[12]

Unfortunately, public health practitioners have informally observed that the number of individuals voluntarily receiving HIV counselling and/or testing is unexpectedly low in China. Moreover, none of the VCT sites or promotion programmes in China have been specifically designed and developed for rural migrants, and very few rural migrants have ever received an HIV test and face-to-face counselling. Thus far, there has been only one study specifically designed to better understand knowledge, attitudes and practices (KAP) of VCT for HIV among rural migrants in Shanghai, the most developed city in China.[13] No study has been done to explore KAP of VCT for HIV among rural migrants in any other areas in China, particularly non-metropolitan areas. Therefore, we report herein a cross-sectional survey on KAP and willingness to use VCT for HIV among rural migrants in a county seat in Shanxi province in central China. A rural migrant in this study was defined as someone born and registered as a permanent resident in another rural area, but who currently worked in the study county seat.

Methods

Study site

This study was conducted in the county seat of Houma county in Shanxi province in central China, which borders Henan and Shann-xi provinces, and had 230 000 permanent local residents and 70 000 rural migrants at the time of the study. The first HIV/AIDS case in Houma county was reported in 1996. He was infected with HIV through commercial plasma donation, the main HIV transmission mode in central China in the 1990s.[14] By May 2006, when this study was conducted, nine HIV/AIDS cases were reported in Houma. Among them, eight were HIV-infected through commercial plasma donation and one through blood transfusion. Five (55.6%) of the nine reported HIV/AIDS cases were rural migrants, indicating the potential role of rural migrants in the local HIV/AIDS epidemic.

Sample selection

Rural migrants in the studied communities were primarily employed or self-employed in five broad venue categories: markets, construction sites, factories, entertainment establishments and commercial service venues, including restaurants, hotels and guest houses. Because of the large size of the rural migrant population in the study site and the lack of a sampling frame, a semi-random sampling approach called quota sampling was employed for sample selection. The quota sampling required that the number of subjects recruited from a specific venue category in the sample was proportional to the number of subjects employed in that specific venue category in the entire migrant population. From each venue category, rural migrants were recruited conveniently (i.e. usually not randomly) until the required number of study participants for that venue category was met. In total, 1400 rural migrants (~2% of the migrant population in the study site) working in the above five broad venue categories were approached and 1280 (91.4%) agreed to participate in the survey following administration of informed consent.

Data collection

A five-part anonymous questionnaire was developed to obtain information about socio-demographic characteristics, migration status, knowledge and attitudes concerning HIV/AIDS and infected individuals, sexual behaviours and KAP of VCT. The majority of the questions have been widely used or reported in the literature. Interviews were administered face-to-face by trained public health workers. A small incentive equivalent to US $3 was given to each participant as compensation for their time. The completed questionnaires were placed in a large black bag containing other completed questionnaires, reassuring the participants that no one could identify their own questionnaire.

Measures

HIV/AIDS knowledge was measured by 12 questions (6 questions were about the 3 transmission modes of HIV and condom use for HIV prevention, 3 regarding misconceptions about HIV transmission through mosquito bites, shaking hands and eating with an HIV-infected individual, 2 about HIV diagnosis and 1 on whether HIV/AIDS was curable). The total score for HIV knowledge ranged from 0 to 12 (a score of 0 was designated for a wrong answer or an answer of unknown or unsure and 1 for a correct answer). Attitude about HIV was measured by one question asking whether the participant was willing to work with an HIV-infected individual.

Statistical analysis

Descriptive analyses were conducted to elucidate KAP of HIV/AIDS and VCT for HIV. Tests of associations between categorical variables were based on the chi-squared test or Fisher's exact test, whichever appropriate. Two multiple logistic regression analyses were conducted separately to identify factors independently associated with knowledge of VCT and willingness to use VCT. Their respective odds ratios (ORs) and 95% confidence intervals (95% CIs) were calculated. All statistical analyses were carried out using the SAS System for Windows (Cary, NC), Version 10.0.

Results

Description of study participants

Table 1 presents and compares socio-demographic characteristics by gender. The sample consisted of 45.3% males and 54.7% females, and a mean age of 29.81 years (SD = 10.63). Most participants were of Han ethnicity (98.8%) and received junior high school education (65.4%). About 38.8% were single and 41.1% had lived in the study site for <1 year. About 55.5% visited their hometowns four times or more within a year. Only 9.8% lived alone. Male and female participants were significantly different in age distributions, work venues and annual home visits (table 1).

Knowledge and attitudes about HIV/AIDS

Most (84.4%) of the participants knew that HIV infection is diagnosed by blood testing, but 21.5% thought AIDS was curable. Approximately 95% of them understood that HIV could be transmitted through blood transfusion and 90.5% could be sexually transmitted. Approximately 88% knew that HIV can be transmitted from a pregnant woman to her child, but only 70% recognized HIV could be transmitted from mother to child through breastfeeding. Only 56.0% thought that consistent condom use could prevent HIV transmission. Although 87.7% believed that shaking hands could not transmit HIV, nearly a half (50.4%) thought that HIV could be prevented by regular use of antibiotics and 18.2%

Table 1 Socio-demographic characteristics and HIV/AIDS-related knowledge and attitudes of study participants

	Male ($n=580$) (%)	Female ($n=700$) (%)	Total ($n=1280$) (%)
Han ethnicity ($P=0.255$)			
Yes	575 (99.1)	689 (98.4)	1264 (98.8)
No	5 (0.9)	11 (1.6)	16 (1.2)
Age (years, $P=0.003$)			
15–25	212 (36.6)	316 (45.1)	528 (41.3)
26–35	157 (27.1)	186 (26.6)	343 (26.8)
36–45	139 (24.0)	143 (20.4)	282 (22.0)
45–62	72 (12.4)	55 (7.9)	127 (9.9)
Work venue ($P<0.001$)			
Market	238 (41.0)	319 (45.6)	557 (43.5)
Commercial service	168 (29.0)	161 (23.0)	329 (25.7)
Entertainment establishment	43 (7.4)	182 (26.0)	225 (17.6)
Factory	49 (8.5)	25 (3.6)	74 (5.8)
Construction site	82 (14.1)	13 (1.9)	95 (7.4)
Education (school, $P=0.596$)			
Primary or lower	76 (13.1)	82 (11.7)	158 (12.3)
Junior high	371 (64.0)	466 (66.6)	837 (65.4)
Senior high or college	133 (22.9)	152 (21.7)	285 (22.3)
Marital status ($P=0.508$)			
Single	219 (37.8)	277 (39.6)	496 (38.8)
Currently or ever married	361 (62.2)	423 (60.4)	784 (61.2)
Residing in Houma county ($P=0.072$)			
<1 year	262 (45.2)	264 (37.7)	526 (41.1)
1–3 years	83 (14.3)	125 (17.9)	208 (16.3)
>3 years	235 (40.5)	311 (44.4)	546 (42.6)
Annual home visits (times, $P<0.001$)			
≤ 1	193 (33.3)	170 (24.3)	363 (28.4)
2–3	96 (16.5)	110 (15.7)	206 (16.1)
≥ 4	291 (50.2)	420 (60.0)	711 (55.5)
Living status ($P=0.006$)			
Living alone	69 (11.9)	56 (8.0)	125 (9.8)
Living with spouse or a sex partner	260 (44.8)	286 (40.9)	546 (42.7)
Living with others	251 (43.3)	358 (51.1)	609 (47.6)
HIV/AIDS knowledge (scores, $P<0.001$)			
10–12	225 (38.8)	229 (32.7)	454 (35.5)
7–9	239 (41.2)	363 (51.9)	602 (47.0)
0–6	116 (20.0)	108 (15.4)	224 (17.5)
Willingness to work with HIV(+) individual ($P=0.030$)			
Yes	241 (41.6)	250 (35.7)	491 (38.4)
No	339 (58.4)	450 (64.3)	789 (61.6)

thought that sharing food could transmit the virus. The question that participants answered incorrectly the most often was whether HIV could be transmitted through mosquito bites; 70% thought that it could. In general, females had less knowledge about HIV/AIDS than males (table 1). Nearly two-thirds (61.6%) of the participants were not willing to work with an HIV-infected individual, and this was more prevalent among females (table 1).

Sexual behaviours and HIV risk perception

Sex life

Most (88%; 1125/1280) of the participants reported having sexual intercourse during their lifetime, with 69% of singles reporting having sexual intercourse. Among those having sexual experience, 55.8% had had sex in the past month. Currently or ever-married participants were more likely to have had sex in the past month than singles (table 2).

Condom use

During intercourse in the past month, only 21% of the participants always used condoms, whereas 57% did not. Condoms were used primarily for prevention of pregnancy and, to a lesser extent, for prevention of disease. Compared to currently or ever-married migrants, single migrants used condoms more frequently (table 2).

Table 2 Sexual behaviour and HIV risk perception among study participants

	Single ($n=496$) (%)	Currently or ever married ($n=784$) (%)	Total ($n=1280$) (%)
Ever had sexual intercourse ($P<0.001$)			
Yes	342 (69.0)	784 (100.0)	1,126 (88.0)
No	154 (31.0)	0	154 (12.0)
Had sex in the past month ($n=1126$, $P<0.001$)			
Yes	69 (20.2)	559 (71.3)	628 (55.8)
No	273 (79.8)	225 (28.7)	498 (44.2)
Condoms use among those having sex in the past month ($n=628$, $P<0.001$)			
Always	45 (65.2)	87 (15.6)	132 (21.0)
Sometimes	12 (17.4)	126 (22.5)	138 (22.0)
Never	12 (17.4)	346 (61.9)	358 (57.0)
Purpose of using condoms among those using them in the past month ($n=270$, multiple answers possible)			
To prevent dirty sex ($P=0.001$)	16 (28.1)	27 (12.7)	43 (15.9)
To prevent pregnancy ($P=0.498$)	43 (75.4)	151 (70.9)	194 (71.9)
To prevent diseases ($P=0.001$)	47 (82.5)	79 (37.1)	126 (46.7)
Perceived own risk of HIV infection ($P=0.762$)			
Yes	20 (4.0)	29 (3.7)	49 (3.8)
No	476 (96.0)	755 (96.3)	1231 (96.2)
Ever had STD symptoms ($P=0.028$)			
Yes	35 (7.1)	84 (10.7)	119 (9.3)
No	461 (92.9)	700 (89.3)	1161 (90.7)
Had unprotected commercial sex ($P=0.036$)			
Yes	20 (4.0)	16 (2.0)	36 (2.8)
No	476 (96.0)	768 (98.0)	1244 (97.2)

HIV risk perception

Very few (3.8%) felt that they were likely to be HIV infected now or in the future. Low awareness of HIV risk did not differ between males and females (4.0% vs. 3.7%; $P=0.762$). A small proportion (9.3%; 119/1280) had ever had sexually transmitted disease (STD) symptoms. Among them, only four (3.4%) were aware of HIV risk. Few (36; 2.8%) reported that they had engaged in unprotected commercial sex (table 2).

Voluntary counselling and testing

Knowledge of VCT

Only 56.6% of the participants had heard of VCT for HIV (table 3). Logistic regression analysis indicated that migrants who were employed at entertainment establishments were more knowledgeable about HIV/AIDS, had more awareness about HIV risk and were more likely to have heard of VCT (data not shown). However, having heard of VCT was not significantly associated with gender, age, marital status, duration at the study site, number of annual home visits or whether living alone or not (data not shown). Moreover, among those having heard of VCT, only 55.9% of males and 63.2% of females were aware of the availability of free VCT at the local Center for Disease Control and Prevention (CDC).

Willingness to use VCT

After receiving a face-to-face introduction of the concept and availability of VCT for HIV, 826 participants (64.5%) reported that they were willing to use free VCT services if they perceived their own risk of HIV infection (table 3). Reported reasons for unwillingness to use free VCT included stigma associated with going to VCT, testing positive for HIV and no perceived benefit of knowing HIV status. About 48.7% of the study participants most preferred to use VCT at a local CDC, 27.0% at a general hospital and 18.5% at home. General hospitals and homes were more preferable for women (table 3). Very few were willing to use VCT at family planning clinics or mobile VCT services.

Logistic regression analysis indicated that females, those with little knowledge about HIV/AIDS, being unwilling to work with

Table 3 Knowledge, attitudes and willingness to use VCT for HIV and acceptance of alternative HIV testing approaches among study participants

	Male ($n=580$) (%)	Female ($n=700$) (%)	Total ($n=1280$) (%)
Had heard of free VCT services ($P=0.069$)			
Yes	312 (53.8)	412 (58.9)	724 (56.6)
No	268 (46.2)	288 (41.4)	566 (43.4)
Willingness to use VCT upon perception of own HIV risk ($P<0.001$)			
Yes	412 (71.0)	414 (59.1)	826 (64.5)
No	168 (29.0)	286 (40.9)	454 (35.5)
Most preferred place for VCT ($P<0.001$)			
Local CDC	227 (55.1)	175 (42.3)	402 (48.7)
General hospital	106 (25.7)	117 (28.3)	223 (27.0)
Family planning clinic	11 (2.7)	36 (8.7)	47 (5.7)
Home	67 (16.3)	86 (20.8)	153 (18.5)
Other places	1 (0.2)	0 (0.0)	1 (0.1)
Ever tested for HIV ($P=0.043$)			
Yes	13 (2.2)	30 (4.3)	43 (3.4)
No	567 (97.8)	670 (95.7)	1237 (96.6)
Acceptance of 'opt-out' HIV testing in various clinical settings, such as antenatal clinics or physical examinations for employment or a marriage license ($P=0.009$)			
Yes	484 (83.4)	543 (77.6)	1027 (80.2)
No	196 (16.6)	157 (22.4)	253 (19.8)
Acceptance of community-based, confidential and free mass HIV screening ($P=0.001$)			
Yes	485 (83.6)	533 (76.1)	1018 (79.5)
No	95 (16.4)	167 (23.9)	262 (20.5)
Who one would inform of HIV-positive status (multiple answers possible)			
Spouse or live-in sex partner ($P=0.396$)	350 (60.3)	406 (58.0)	756 (59.1)
Other family members ($P=0.897$)	283 (48.8)	399 (48.4)	622 (48.6)
Friends ($P=0.412$)	126 (21.7)	139 (19.9)	265 (20.7)

HIV-infected individuals, never having been tested for HIV and having low awareness of HIV risk were less willing to use VCT (table 4).

Practices of HIV testing and VCT

Very few (43; 3.4%) reported having ever been tested for HIV and none had been tested at a VCT clinic. Most were tested in conjunction with blood donation or surgery.

Willingness to disclose HIV infection status

Only 756 participants (59.1%) reported that they would disclose their HIV-positive status to their spouse or a long-term partner if they learned that they were HIV positive. A slightly lower proportion (48.6%) of the participants reported that they would disclose their HIV-positive status to other family members if they learned they were HIV positive and 20.7% would tell their friends. There were no statistically significant differences in disclosure of HIV-positive status between males and females (table 3).

Acceptance of alternative HIV testing approaches

Most (80.2%) of the study participants accepted an 'opt-out' approach to HIV testing in clinical settings, such as integrating HIV testing into antenatal examinations or physical examinations for employment or a marriage license (table 3). A community-based, confidential and free mass HIV screening programme was also acceptable to the majority (79.5%) of study participants (table 3).

Discussion

Several studies have been conducted to examine acceptability and practices of VCT in mainland China.[15–22] One study was recently conducted to examine KAP of VCT among rural migrants in Shanghai, the largest metropolitan city in China.[13] None were specifically designed to examine KAP of VCT among rural migrants in any other areas of China, especially non-metropolitan (small) cities. Therefore, the present study will not only aid our understanding KAP of VCT for HIV among rural migrants in non-metropolitan areas, but more importantly, provide useful information for developing tailored VCT services for rural migrants in such areas in China.

Despite the wide availability of VCT services in China,[6] only 56.6% of the participants had heard of VCT for HIV, and a substantial proportion of them did not know about the availability of free VCT at various CDCs. These observations are comparable with those among rural migrants in Shanghai,[13] highlighting the urgent need of nationwide VCT education and promotion programmes in China.

The proportion of participants who were willing to use VCT upon awareness of risks for HIV infection (64.5%) was lower than the

Table 4 Proportions and correlates of willingness to use VCT for HIV among study participants

	Proportion willing to use VCT (%)	OR (95% CI)	*P*-value
Gender			
Male	412/580 (71.0)	1.61 (1.25–2.09)	**<0.001**
Female	414/700 (59.1)	1.00	
Age (years)			
15–25	344/528 (65.2)	1.12 (0.61–2.03)	0.722
26–35	231/343 (67.3)	1.29 (0.82–2.06)	0.270
36–45	175/282 (62.1)	1.06 (0.67–1.67)	0.829
46–62	76/127 (59.8)	1.00	
Work venue			
Market	321/577 (57.6)	0.38 (0.19–0.73)	0.004
Commercial service	229/329 (69.6)	0.68 (0.36–1.28)	0.229
Entertainment establishment	151/225 (67.1)	0.63 (0.32–1.23)	0.178
Factory	51/74 (68.9)	0.78 (0.36–1.69)	0.526
Construction site	74/95 (77.9)	1.00	
Education (school)			
Primary or lower	108/158 (68.4)	1.45 (0.91–2.30)	0.121
Junior high	535/837 (63.9)	1.01 (0.75–1.36)	0.955
Senior high or college	183/285 (64.2)	1.00	
Marital status			
Single	328/496 (66.1)	1.02 (0.61–1.71)	0.949
Currently or ever married	498/784 (63.5)	1.00	
Residing in Houma county (years)			
<1	349/526 (66.3)	1.11 (0.73–1.67)	0.639
1–3	140/208 (67.3)	1.13 (0.71–1.78)	0.612
>3	337/546 (61.7)	1.00	
Annual home visits (years)			
≤1	236/363 (65.0)	1.12 (0.75–1.67)	0.587
2–3	136/206 (66.0)	1.35 (0.90–2.01)	0.146
≥4	454/711 (63.9)	1.00	
Living status			
Living alone	87/125 (69.6)	1.42 (0.85–2.36)	0.177
Living with spouse or a sex partner	378/546 (69.2)	1.38 (0.89–2.15)	0.153
Living with others	361/609 (59.3)	1.00	
HIV/AIDS knowledge score			
10–12	310/454 (68.3)	1.40 (0.98–1.99)	**0.059**
7–9	387/602 (64.3)	1.61 (1.09–2.38)	**0.017**
0–6	129/224 (57.6)	1.00	
Willingness to work with an HIV(+) individual			
Yes	350/491 (70.1)	1.48 (1.15–1.92)	**0.003**
No	476/789 (60.3)	1.00	
Sex in the past month			
Never had sex in lifetime	107/155 (69.0)	1.01 (0.60–1.67)	0.989
No sex in the past month	313/497 (63.0)	0.79 (0.51–1.22)	0.282
Had sex in the past month	406/628 (64.6)	1.00	
Ever tested for HIV			
Yes	35/43 (81.4)	2.49 (1.11–5.57)	**0.027**
No	791/1237 (63.9)	1.00	
Perceived own risk of HIV infection			
Yes	39/49 (79.6)	1.86 (0.90–3.38)	**0.093**
No	787/1231 (63.9)	1.00	

OR, 95% CI, which was adjusted for other variables listed in this table by multiple logistic regression analysis

Bold *P*-values ≤0.05 were considered statistically significant, while *P*-value ≤0.1 were marginally significant

proportion in the study conducted by He *et al.*[13] among rural migrant workers in Shanghai (92.1%). Reasons for such a low rate of VCT acceptance included but were not limited to little knowledge of HIV/AIDS, stigma towards HIV-infected individuals, and low HIV risk awareness. Similar findings were also reported in other studies.[21,23–25] Females were also found to be less willing to use VCT than males in this study. Moreover, none of the participants had ever actually used VCT. Those who had been tested for HIV did so mainly in conjunction with blood donation or surgery. This further underscores the need for greater efforts to improve HIV/AIDS knowledge and risk awareness among rural migrants, especially females, in China.

Of more than 4000 VCT sites in China, nearly 20% are located in hospitals.[6] This is very important for migrants, because 27.0% of the participants in our study preferred using VCT in hospitals. Furthermore, 18.5% of the participants preferred home-based VCT. Home-based VCT has been shown to be effective in increasing the uptake of testing and receipt of results in developing countries.[26,27] Given the availability of rapid blood testing and commercial products for oral HIV testing in China, home-based VCT could be an alternative strategy to offer VCT. On the other hand, most participants indicated that they accepted an 'opt-out' approach for HIV testing in various clinical settings, as well as community-based, confidential and free mass HIV screening programmes. This attitude supports the present HIV testing strategy in China.[28]

A substantial proportion of the participants would choose not to disclose their HIV infection status to their spouses or others if they learned that they were HIV positive. This violates the current regulations in China, which require HIV-infected individuals to disclose their HIV status to their spouse. Moreover, concealment of HIV status could be a barrier to accepting behavioural interventions and seeking healthcare and social support. The low willingness to disclose HIV infection status might be due to stigma towards HIV-infected individuals. In fact, 61.6% of the study participants were not willing to work with an HIV-infected colleague. Stigma about HIV infection has been observed among Chinese populations, and has been a severe barrier to HIV prevention and care efforts.[29–34] In fact, willingness to work with HIV-infected individuals was shown to be positively associated with VCT acceptance among rural migrants in the present study. Thus, campaigns to reduce stigma towards PLWH should be an important part of any future HIV prevention and intervention programmes, including VCT that targets rural migrants in China.

The majority (69.0%) of the single participants had had sexual intercourse, indicating a higher prevalence of premarital sex than reported in other studies of rural migrants.[13,35–37] Fortunately, condom use was relatively common among these single participants for prevention of pregnancy and disease transmission. On the other hand, most married people did not use condoms, or they used condoms only for pregnancy prevention. Some participants, including those who were married, also engaged in unprotected commercial sex. This suggests the importance of promoting safer sexual behaviours, especially condom use, among rural migrants in China.

This study has certain limitations. Some participants might have misunderstood some of the questions about VCT. Some might be reluctant to report a history of engaging in commercial sex or HIV testing. Therefore, the proportions of subjects admitting to participating in commercial, pre-marital and extra-marital sex might be underestimated. To minimize such bias, we asked local public health providers to serve as the interviewers for the study and trained them specifically for it. All interviews took place in a private room and the survey was anonymous.

In conclusion, a large number of rural migrants in China are not reached by current HIV prevention and control programmes, especially VCT. Without successful implementation of VCT or other HIV-testing approaches, large numbers of HIV-infected individuals will not be identified, and the national anti-HIV campaign will not succeed in China. Findings from the present study have important implications for developing tailored VCT promotion programmes targeting rural migrants in China. First, much greater effort is needed to improve HIV/AIDS and VCT knowledge and to decrease stigma towards HIV-infected individuals among rural migrants. Second, the high prevalence of premarital sex and the low rate of consistent condom use underscores the importance of promoting safer sexual behaviours, especially condom use. Third, programmes intended to improve awareness of HIV risk among rural migrants, particularly those engaging in risky behaviours, need to be designed and implemented.

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Key points

- Knowing one's HIV status is the first step to accessing care and preventing further infection. However, among 700 000 people living with HIV in China, the majority still do not know their HIV infection status.
- During the last 5 years, China has established 4293 VCT sites all over the country to provide free HIV testing. None of these VCT sites has been specifically designed and developed for migrants and very few migrants have ever been tested for HIV. Information on VCT uptake and barriers among this population is limited.
- In this cross-sectional study, KAP of VCT among rural-to-small city migrants were evaluated. Findings from the present study have important implications for developing intervention programmes that target rural migrants in urban areas.

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Ethnic differences in growth in early childhood: an investigation of two potential mechanisms

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Background: There are clear ethnic differences in birthweight. This study examines whether and how these disparities are replicated in a later marker of physical development, height at 5 years. **Methods:** Observational data from the UK Millennium Cohort Study, constructed to over-represent ethnic minority (Indian, Pakistani, Bangladeshi, Black African, Black Caribbean and Other) children. **Results:** Mean birthweight of ethnic minority children was lower than that of the ethnic majority (3.06–3.34 kg vs. 3.41 kg), but ethnic minority children were not shorter at 5 years. Pakistani, Caribbean and African children were actually taller on average (by 0.5 cm, 1.4 cm and 3.5 cm). Controlling for parental height and birthweight did not affect height differentials. Two mechanisms were hypothesized: (i) a cramped intrauterine environment given the short stature of some minority children's mothers resulted in catch-up growth; and (ii) conditions during the parents' childhood led to a reduced capacity to reach their height potential. A reparameterization of parent heights showed that mother's height contributed more to predicting child height than joint parental height alone. Birthweight was positively related to height and attenuated the extra contribution from mothers' heights. Decomposing the effects into their constituent parts found some support for both hypotheses. **Conclusions:** These results suggest that children from ethnic minority backgrounds are not disadvantaged with respect to height growth compared with the ethnic majority. However, if adiposity is more likely when children are tall for their age, then ethnic inequalities in adult health could increase as the current generation of children mature.